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While I admire the style in which it is got up and conducted, I would beg to say that I endorse the suggestions of your correspondent J. A. K. in the March number, with regard to having all plans and elevations drawn to scale. Few workmen can construct anything in correct proportion from the handsome designs published, owing to the want of accompanying scales. P. D.

WALLINGFORD, Conn., April 15, 1879.

Editor of the Illustrated Wood-Worker:

I SEE by a note in your last issue that we are to have a treat from Professor R. Riddell, of Philadelphia, in the way of geometrical lines and their uses. I know his papers will be valuable, and I shall look forward with pleasure to see them, as I owe all my success in hand-railing to Mr. Riddell's valuable works on that subject. I would say to "Apprentice," who asks through your last issue for information regarding the best work on hand-railing, that I have tried all the lines on stair-building that have been published, from Peter Nicolson down to the present date, and find Riddell's system of elevating tangents to give the most satisfaction if properly used, for it always leads to success.

R. M. LAIRD.

JOHNSTOWN, Pa., April 15, 1879.

Intercommunication.

THIS department is intended to furnish, for the benefit of all our readers, practical information regarding the art of manipulating wood by hand or machinery; and we trust that every reader of our paper will make the fullest use of it, both in asking and answering. All persons possessing additional or more correct information than that which is given relating to the queries published, are cordially invited to forward it to us for publication. All questions will be numbered, and in replying it will be absolutely necessary, in order to secure due insertion, that the NUMBER and TITLE of the question answered should be given; and in sending questions, the title of key-words of the question should be placed at the head of the paper. Correspondents should in all cases send their addresses, not necessarily for publication, but for future reference. We also request that all questions or answers be written on separate slips of paper, and addressed to the Editor. Notes of practical interest will be welcome at all times. When drawings are sent to illustrate answers to questions, or for full pages, they should be on separate slips, and should be drawn in ink on clean, white paper. Short questions, requiring short answers, may be asked and answered through the agency of postal cards.

When answers to questions are wanted by mail, the querist must send a stamp for return postage.

Queries.

30. STAIR CYLINDER.—Will some reader of the ILLUSTRATED WOOD-WORKER inform me as to the best methods of getting the shape of a stringboard for the cylinder of a flight of stairs, height of riser and width of tread being given?—JACK LEG.

31. TEAK WOOD.—Where does teak wood grow, and what is it used for? Any information on this subject will greatly oblige.—BACKWOODSMAN.

32. MOULDINGS.—Thanks to "Stickingboard" for the explanation he gave in the April number of the WOOD-WORKER regarding the method he adopts to stick circular mouldings. I do not thoroughly see through the method, and would be pleased to see it more fully explained by illustration, if it is not asking too much.—PUZZLED.

33. HOWE TRUSSES.—I would feel obliged to any reader that will inform me how the Howe Trusses are made. I think those who know try to keep the method a secret, for I have worked on Howe bridges for twelve months, and have never been permitted to learn the method.—WM. E. H.

34. COTTAGE.—I would like if Mr. Stuart, of New London, Conn., would answer the following questions regarding the cottage he designed, and which is illustrated on Plate 16, February number of the WOOD-WORKER:

1. Are the stairs boxed or balluster ones?
2. Where the partition is not carried along on the right of chimney, is that intended to be the doorway to cellar (under the stairs)?
3. Is there to be a porch (indicated by the double line) in front, and permanently boarded or covered round?
4. What pitch to roof?
5. Is the plan, as it appears, drawn to the same scale?
6. Are there two windows side by side on each end?—P. D.

Answers.

WE wish it distinctly understood, that we do not hold ourselves responsible for the accuracy or reliability of answers furnished to this department by our correspondents.

We cordially invite our readers to take an active part in this department, as we are confident that much good can be accomplished by a free interchange of ideas and opinions in regard to subjects connected with the art of wood-working.

Many persons are afraid to write to a public journal because of their lack of literary attainments; to such we would say: Give us your ideas in such language as you can command, and leave the rest to us. It is ideas and opinions we want, such as may be of use to the workingman or amateur.

18. MIRROR.—Clean the bare portion of the glass by rubbing it gently with fine cotton, taking care to remove any trace of dust and grease. If this cleaning is not done very carefully, defects will appear around the place repaired. With the point of a knife cut upon the back of another looking-glass around a portion of the silvering of the required form. but a little larger. Upon it place a small drop of mercury; a drop the size of a pin's head will be sufficient for a surface equal to the size of the nail. The mercury spreads immediately, penetrates the amalgam to where it was cut off by the knife, and the required piece may now be lifted and removed to the place to be repaired. This is the most difficult part of the operation. Then press lightly the renewed portion with cotton; it hardens almost immediately, and the glass presents the same appearance as a new one.—PILFER.

19. Bench.—"Gouge" will find the bench shown on Plate 39 a very complete one. I forward the following description: "The framing is connected by screw-bolts and nuts. The top surface is a thick plank planed very true. It has a trough at *a* to receive small tools, and a drawer at *z*. Two side-screws *c d*, which, with the jaw *e*, constitute a vice for fixing work. An end-screw *g*, and sliding-piece *h*, form another vice for thin works which require to be held at right angles to the position of the other jaw *e*; but its chief use is to hold work by the two ends. Work, when laid on the top of the bench, is steadied by the iron bench-hook *k*, which slides in a mortise in the top, and has teeth at the end which catches the wood. When work would be injured by the bench-hook, the stop *m*, sliding stiffly in a square mortise in the bench-top, serves to stay it. The stop and bench-hook are shown separately, drawn to a much larger scale. There are several square holes along the front of the top, also, at distances apart from each other equal to the motion of the sliding-piece *h*, which has a similar hole. In these bench-holes the iron stop *n* is inserted, and a similar stop is also inserted in the hole in *h*. Thus, any piece of wood whose length does not exceed the distance between the end-hole of the bench and the stop in *h* when it is drawn out to the full extent of its range, may be secured. The face of the stop *n* is slightly roughened. A holdfast *o*, sliding loosely in a mortise, is used in holding square pieces of work on the bench. It is fixed by driving on the top, and released by driving on the back. At *p* is a pin, which is placed in any of the holes shown in the piece in which it is fixed, to support the end of long pieces, which are held by the screws *c d*, at their other extremity. Various improvements in the bench-hooks, stops, and holdfasts have been from time to time suggested, such as making them work by screws; but being in their simple form sufficiently manageable, and the improvements being more expensive, they have not obtained general use. The carpenter's bench is composed of a platform or top, supported on strong framing. It is furnished with a bench-hook at the left-hand end; at which end also the side-board has the screw and screw-cheek, together forming the vice or bench-screw. The side-board and right-hand leg of the bench are pierced with holes, into any one of which a pin is inserted, to hold up the end of any long piece of work clamped in the bench-screw. The length of the bench may be 10 to 12 feet, the breadth 2 feet 6 inches, the height about 2 feet 8 inches. The legs should be 3½ inches square, well braced; front top-board should be 2 inches thick; the further boards may be 1¼ inch. These two benches may be regarded as the opposite extremes of the scale, and between them may be many varieties both in size and in the number of the fittings, as inclination or the necessities of the workman may dictate."—Ned.

21. Eolian Harp.—I forward a rough sketch (Fig. 7, Plate 35) of an Eolian harp for "Musical," which I think will suit him. To construct one he should begin by making a box, with the top, bottom, and sides of thin wood, and the ends of 1½ in. beech; form it the same length as the width of the window in which it is to be placed. The box should be 3 in. or 4 in. deep, and 6 in. or 7 in. wide. In the top of the box, which acts as a sounding-board, make three circular holes, about two inches in diameter, and an equal distance apart. Glue across the sounding-board, about 2½ in. from each end, two pieces of hard wood ¼ in. thick and ½ in. high, to serve as bridges. Procure from any musical instrument maker twelve steel pegs, similar to those in a piano, and twelve small brass pins; these you must insert in the ends of the box—that is, in the beech, as shown in the sketch. Finish one end first, commencing with a brass pin; then insert a steel peg, and so on, placing them alternately ½ in. apart to the number of twelve. Now for the other end, which you must commence with a steel peg (exactly opposite the brass pin at the opposite end), then a brass pin, and so on, alternately, to the number of twelve; by this arrangement you have a steel peg and a brass pin always opposite each other; this is done so that the pressure of the strings on the instrument shall be uniform. Now string the instrument with twelve first violin strings; make a loop at one end of each string, which put over the brass pins, and wind the other round the opposite steel peg. Tune them in unison, but take care that the strings be not drawn tight. If you should desire to increase the current of air, place a thin board about two inches above the strings, which can be supported at each end by two pieces of wood; place the instrument in a partly opened window, and to increase the draught open the opposite door.—Amateur.

21. Eolian Harp.—The sketch (Figs. 8 and 9, Plate 35) gives a simple Eolian harp, with four wires. The box should just fit the window where you want to use it. Make a box of pine, the full width of window, about 4 in. wide, 3 in. deep, of ½ in. stuff; fasten with glue and screws. A hard wood block, about 1½ in. square, in which the four iron pegs—like those in a piano—are to be put. The wires to be of steel, running from peg to peg, and tuned either to major or minor chords. This can be done from a piano. The lid and box are made concave, to admit the rush of air.—Curious.

22. HAND-RAILING.—"Balluster" should first get a copy of the "Artisan," by Robert Riddell, and after mastering its contents he will have acquired a fair knowledge of the principles of hand-railing. He should then obtain a copy of "New Elements of Hand-railing," by the same author. These two works will give him more information on the science of hand-railing, with less study, than all other works on the art published.—PRACTICAL STAIR BUILDER.

22. HAND-RAILING.—I have used the "American Stair-Builder's Guide," by L. D. Gould, and found it all I could desire. It is plain, yet comprehensive, as it shows how to get lines for almost all kinds of stairs. It is cheap, only costing three dollars. I have tried Monkton's and Cupper's works, but I must say that for a new hand I think Gould's book is far the best.—MODEST.

23. SCALE.—The divisions shown on the square that appear so mysterious to "Steel Square" are simply an octagon rule. The way to work them is as follows: Suppose a stick of timber, ten inches square, take a centre line five inches; set a pair of compasses, putting one point on any particular division, and the other point on the tenth subdivision. This distance marked off from the centre line on each side will give the points for the gauge lines. Gauge from the corners both ways, and you will have the lines for an octagon.—WM. E. HILL.

23. SCALE.—In answer to "Steel Square" I may say the scale on the tongues of squares he is perplexed over is called the octagonal scale, and is used in this way: If you have a stick ten inches square which you wish to dress up octagonal, make a centre mark on each face, then with the compasses take ten of the spaces marked by the short cross lines in the middle of the scale, and lay off this distance on each side of the centre lines. Do this at the other end of the stick, and strike a chalk-line through these marks. Dress off the corners to these lines, and the stick will be octagonal. If the stick is not straight, it must be gauged, and not marked with the chalk-line. Always take a number of spaces equal to the square width of the octagon in inches. This scale is used by millwrights, and is very simple and expeditious, especially on very large timber; but on small sticks the old rule of seven inches and seventeen inches is preferable. If this is not explicit enough to "Steel Square," I will give a diagram illustrating the matter, at any time, in the WOOD-WORKER.—TUBAL CAIN.

[We have received several other answers to this "query," but deem the ones offered ample and reliable.—ED.]

24. CIRCULAR SAW.—"Mechanic" can make his saw plough by using wooden washers that are made thin on one edge and thick on the other. Make the washers as follows: Take two pieces of pine four inches square and half an inch thick. Bore a hole through each one in the centre the size of the saw mandril, then make each piece like a wedge, leaving the thin end about a quarter of an inch thick. After this is done, make the washers round, leaving them about the same diameter as the metal washer on the mandril. Then, to adjust them for work, you first take off the metal washer and saw, and put on one of the wooden washers, with the thin edge up; then put on the saw, then the other wooden washer, then the metal washer, and lastly the nut, which must be screwed up pretty solid. It will be seen that the saw does not sit at right angles to the mandril, and by trying it on a piece of stuff it will be found out how much the saw is out of truth; and if it is more than the width of the required groove, it can be reduced by changing the positions of the wooden washers. This method of adjusting a circular saw is called by some "wobbling the saw." Care must be taken not to crowd the saw when cutting grooves, or they will be narrower in some places than they ought to be, owing to the springing of the saw.—MANDRIL.

25. SPRING AND PLUMB BEVEL.—If "Apprentice" will have patience for a little while, he will have all the things he inquires about fully explained in the papers now being published in the WOOD-WORKER.—AN ADMIRER OF THE SECTORIAN SYSTEM OF HAND-RAILING.

27. AREA.—The area of the cylindrical ring can be ascertained by two methods, thus:

1. Multiply difference of squares of internal and external diameter by the decimal ·7854. This will give required area. Example: Let the inner diameter be 8 and the outer one 16; then we have: $16^2-8^2=256-64=192\times ·7854 =150·7968$.

2. Multiply the mean of the inner and outer circumferences by the width of ring, which in this case is 4, and we find the same result. Example:

$3·1416\times16=50·2656$
$3·1416\times\ 8=25·1328$

$2)75·3984$

$\text{Mean}=37·6992\times4=150·7968$
as before. —P. D.

27. OIL.—I have used Virginia Amber Oil in my factory for many years, and think it the best and most economical in the market. I employ twenty-three hands in my shop, and have a full complement of wood-working machinery, and have yet to hear of the first complaint regarding the oil used.—OBSERVER.